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ABSTRACT

As drill and practice programs in computer assisted instruction (CAI) in English give students a chance to test their understanding and free the teacher from test grading, they seem a legitimate if unexciting use of the computer; but what seems less defensible is that, according to some estimates, 90% of available CAI software is of this drill and practice type. A new form of CAI known as "simulation," however, uses the computer's full capabilities to put students in a simulated environment to discover for themselves how best to handle a situation. One such simulation in literature instruction is the "Huck Finn" program. After reading assigned pages, the students work with a computer simulation of the situation in which they have just left Huck Finn and try to get themselves out of Huck's predicament. Having faced the situation on the screen and thought their way through it, the students will be more eager to see Huck's solution and more able to share his feelings. The students then read more assigned pages and the process is repeated. Students appear to enjoy the program and one formal evaluation showed that it improved both understanding and appreciation of the book. While the program is open to improvement, it at least uses fully the current state of technology and serves as a model for the type of computer program that might be made available for literature instruction. (Examples of three simulations from the Huck Finn program are included.) (HTH)

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HUCK FINN RIDES A MICROCOMPUTER

Two Approaches to Computer Use in Literature Instruction

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It has been interesting the last few years to watch our profession quickly adopt the use of computers. In writing courses many of us are introducing our students to word processors and using many of the prewriting and editing programs available, such as Hugh Burns' TOPOI, Michael Cohen's HOMER, and my Writer's Helper. In literature instruction Steve Marcus' Compupoem is widely used and a whole series of fiction programs are being tried. For a profession often perceived as being pretty stodgy, we seem to be quick to test the technological waters.

While we are currently trying a number of interesting uses of the computer, we sometimes ask too little of these machines. It is as if we had been given a Maserati and then just used it to go back and forth to the store for groceries. A good example of this would be programs which just ask the computer to ask simple questions and then "grade" students' answers. Such quiz-type programs seem especially prevalent in computer-based literature instruction.

A good example would be a series entitled "Soft-lit" developed by Elaine McNally Jarchaw of Iowa State. In a recent article in The Computing Teacher she describes how her program

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could help teach Huck Finn by providing a long series of questions that test students' abilities to recall facts, interpret facts, and draw inferences from facts.

Most of her questions aren't really different from what teach--ers have been asking for generations on quizzes. Let me quote two.

Huckleberry Finn contains many comments which are critical of society in general.

A. Yes

B. No.

Jim runs away from his owner because

A. Jim has been whipped.

B. Jim's wife lives in the South.

C. His owner is going to sell him.

Such questions are pretty standard fare whether asked by a computer or on a pop quiz. They may not be exciting, but they do at least check to see if the student has read the book (or caught the movie last time it was on TV). If the computer has any advant-age over a dittoed quiz at this level, it does still hold some excitement for students and so might boost enthusiasm for quiz taking, and like all computer-generated quizzes, it tells students instantly whether they are right or wrong.

Professor Jarchaw's third set of questions is more original. Here she has students pick a statement with which they agree and then select other statements which support their original assertions.

Rather than grade their answers she arranges their sentence choices into a paragraph so students can see one way their opinions could be worded - not a bad way of beginning a writing exercise.

With that exception, however, her program falls into a class of Computer-assisted Instruction (CAI) programs known as drill and practice. They supply quizzes to test students' progress, give students instant feedback on their understanding of material, and often record total scores for the benefit of their teacher. Such programs seem a legitimate, if unexciting, use of the computer since they do give students a chance to test their understanding and free the teacher from the drudgery of test grading.

What seems less defensible is the fact that according to some estimates a full 90% of available computer software is of the drill and practice type. Surely a machine as complex as the computer can do more than give automated quizzes. And of course it can, but few teachers are designing programs which use the computer's abilities more fully.

Why not use the machine for more interesting tasks? According to some it's a fact that teachers make bad programmers. Having the computer print a line or two of type, ask a basic question, and test for the accuracy of students' answers is the limit of teachers' programming ability, they say. They are wrong. I have taught a large number of teachers how to program and find that even a teacher who has never touched a computer keyboard before can reach a basic

level of proficiency in a single evening, and all are able to produce quite sophisticated programs within a semester.

So why don't teachers produce more challenging software? My opinion is it's simply a lack of good models. When 90% of software is drill and practice, the odds are teachers will only see drill and practice software and so will assume that is what Computer-assisted Instruction is. It is true that in the early days of computers they could only show words or numbers on a teletype and then on a TV monitor, and so drill and practice was the name of the game, but those days are over. Computers can now produce pictures, sound, animation - but only if we ask them to.

In his book, MINDSTORMS: Children, computers and powerful ideas, Seymour Papert refers to this non-use of technological capabilities as the QWERTY principle. He points out that typewriter keyboards are arranged with the upper row arranged Q through E, etc., because early typewriters jammed if oft-struck keys were placed close together. Spreading such keys around the keyboard was a requirement of the early technology. It quickly became less necessary and of course with word processors there are no keys at all so more convenient keyboards are instantly available. But QWERTY hangs on because it is all we know.

Drill and practice hangs on because it is often all that teachers have seen. Luckily this is slowly changing. There is a new form of CAI known as "simulation" which uses the full capabilities of the computer to put students in a simulated environment to

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discover for themselves how best to handle a situation. Flight simulators in the military were the first use of this form of instruction. A program known as "Oregon Trail" produced by the Minnesota Educational Computing Consortium (MECC) is the best example of such a program used in the schools. In both cases the computer produces graphic situations on the screen and students choose alternative actions to resolve problems. If they choose well they can see success on the screen; if they fail, they see the disastrous results of their choices. Gradually, students discover for themselves how to fly or how to get their families over the trail to Oregon.

In literature instruction we are only beginning to try simulations. I'd like to describe one, a simulation of my own, entitled Huck Finn.

Huck began with my concern that students were reading my favorite novel, and even understanding it at one level, but they weren't living it. They were reading the words but not sharing the excitement.

About this time I had a chance to see "Oregon Trail" and "ODell Lake" and a number of other MECC simulations and thought that maybe I could use that approach to help my students better appreciate Huck. I decided I would set up an animated world and let my students "play Huck." I guessed that if they faced his challenges themselves, they would have a much better appreciation of his resourcefulness and creativity. Instead of just nodding their heads and turning the page

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every time he pulled off a major coup, they'd share the challenge and excitement of his situation.

I began by picking three scenes in which I felt Huck showed real genius: escaping from the cabin in Illinois, avoiding the slave hunters outside of Cairo, and getting the Wilkes' money back from the King and Duke. I then had an art instructor draw a series of scenes from these segments of the book. Next I worked on setting the scene and supplying alternative actions. The result is a program which works something like this:

First, students read UPTO a set page. They are supposed to read the first 60 pages of the book for the first simulation, reading which should make them familiar with the setting and with Huck's personality. This brings them to the cabin scene, but rather than read how Huck does it first, I refer them to the program where they take on the role of Huck and see how they could do in that situation.

After several introductory screens the students see these two screens:

1. One morning Pap leaves. He may be back any minute. How do you escape? The window and chimney are too small. The door is solid oak.

Press SPACE BAR to continue

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2. You search the cabin and find these items:

1)candle
2)rope
3)saw
4)table
5)chair

Type in the number of the tool you would use and then hit return. Remember Pap may be home at any time.
[_]

Should a student choose inappropriately, a screen similar to the following would appear:

3. You could burn the cabin down, but how would you get out?
Try again

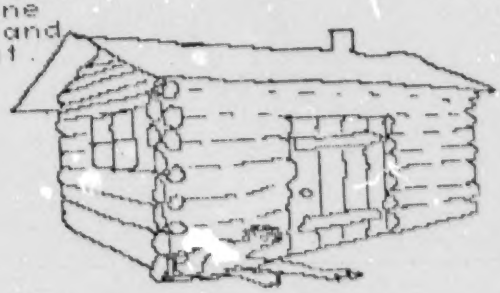
1)candle
2)rope
3)saw
4)table
5)chair

Type in the number of the tool you would use and then hit return. Remember Pap may be home at any time.
[1]

The student chooses again until he or she figures out the correct answer, and then the following two frames appear:

4. YOU'RE FREE!

You use the saw to cut through one of the logs, and then crawl out.



Press SPACE BAR to continue

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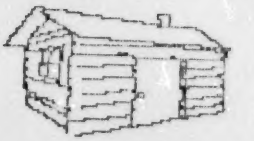
5.

Great job.
But now you have
another problem.
How do you keep
Pap from chasing
you?



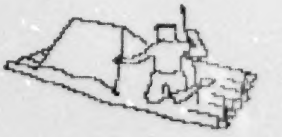
Press SPACE BAR to continue

Following the last screen, another series of questions and alternatives appear so the student has a chance to work out how best to avoid Pap. The whole sequence takes from five to ten minutes after which the computer directs the student to go back to reading the book to see how Huck actually got out of his predicament. Having faced the situation on the screen and thought their way through it, hopefully students will now be more eager to see Huck's solution and more able to share his feelings.

In the next scene, the slave hunters encounter, I took a slightly different tack. I used only one graphic, Jim on the raft, Huck in the canoe, and the slave hunters in the rowboat, but I made the animation constant. It begins with these two scenes:

6.

The Slave Hunters



To do this simulation
you should have
read UP TO page
118.

Have you read this far? Type in a yes
or a no and hit return
?

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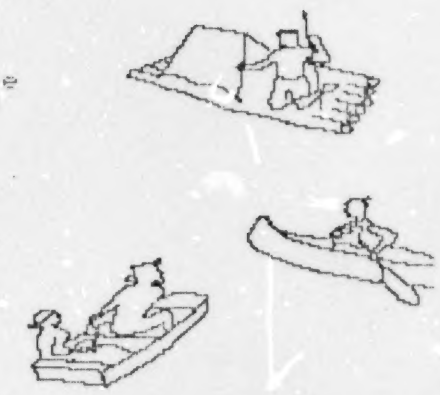
7. You leave Jim on the raft while you paddle the canoe towards shore to see if you have arrived at Cairo yet.

On the way you meet two men looking for runaway slaves. They are rowing quickly toward the raft and Jim.



Press SPACE BAR to continue

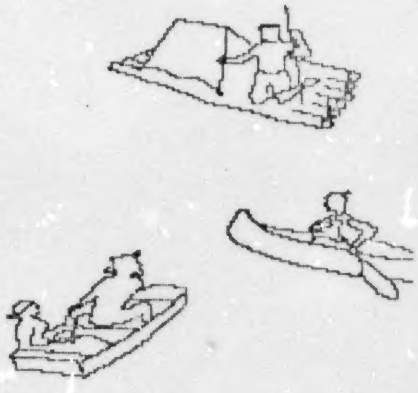
What is unique about this scene is that while the students are reading and thinking, the slave hunters keep rowing closer to Jim. The idea was to make students more appreciative of Huck by both showing his quick thinking, and by showing his quick thinking under pressure.

Again the students are given a question and a series of alternative answers such as the one below, but every time they make a mistake, the slave hunters get closer to Jim.

8. How can you keep them from finding Jim?

1) Try to run.
2) Try to fight.
3) Plead with them.
4) Tell a tall tale.
5) Bribe them.

Type in a number and hit return.
[_]



If they answer correctly, the canoe moves between the hunters and Jim; if they don't, the hunters row right up to Jim and capture him.

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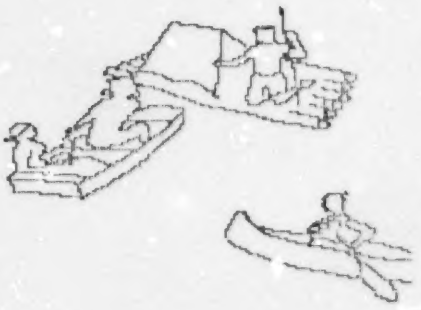
In the screen below the student has already answered incorrectly twice. One more error and Jim will be caught.

9. If you run, what happens to Jim?

He'll get caught.

Try again



Press SPACE BAR to continue

Again with this scene, after trying the situation for themselves, students are told by the program to read the scene in the book to see how their answers compared with Huck's actions.

In the third scene Huck is in a double predicament because while he wants to help the Wilkes girls, if he goes to the authorities and reveals the King's and Duke's real identity, they would surely reveal Jim's location to the sheriff. The following three screens show part of this section.

10. As a gesture of faith the nieces entrust their $3000 to the King and Duke so the two swindlers now have all $6000.

As Huck, you are the only one in town who knows they are swindlers. You like the girls and want to help them, but how?

Press SPACE BAR to continue

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11. Here are your choices:

1) Tell the local sheriff.

2) Run off.

3) Steal the money back.

4) Tell the girls.

5) Convince the imposters to give back the money.

Type in a number and hit return
[_]

12. Great idea!

Now you're thinking like Huck. You steal the money from out of their room so you can give it all to the girls.

But now what? If you give it to the girls, you will have to tell them about the imposters.

Press SPACE BAR to continue

After several more frames we come to the part where Huck hides the money in the coffin.

13. This is exactly what Huck did.

But then the room got crowded and he wasn't able to go back for the money.

Press SPACE BAR to continue

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Again when the scene finally ends the program directs students back to the book.

I've had good luck with the program so far. Students like it, and the one formal evaluation made of it showed it improved both an understanding and an appreciation for the book.

Of course the program can be improved. I'd like to add several more scenes and I'd like to do at least two or three scenes in which the students "play" Jim and see how they would do in his place. But at least the program fully uses the current state of technology and I hope it serves as a model for the type of computer program we can have in literature instruction.

As the technology develops in the areas of video-text and artificial intelligence I hope we can move by this poor effort to take advantage of those new opportunities as well. In any case I hope we can avoid QWERTY in education. There are too many exciting new opportunities on the horizon for us to let ourselves get stuck in one model of how computers can be used in literature instruction or in any other area of instruction.

Jarchaw, F.M. Teaching literature with the help of microcomputers. The Computing Teacher, Nov. 1983, 35-37.

Papert, S. Mindstorms: Children, computers, and powerful ideas. New York: Basic Books, 1980.

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